CONCLUSION

Applicants have responded to each and every objection and rejection, and urge that claims **1-11, 17-21, 26-27, 29-31, 34-35,** and **37-38** as presented and amended are now in condition for allowance. Applicants request expeditious processing to issuance.

The Office is authorized to charge **Deposit Account # 19-0131** for any necessary fees regarding this response.

Respectfully submitted,

Robert D. Watson

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Certificate of Transmission under 37 CFR 1.10

I hereby certify that this correspondence was transmitted via facsimile to the U.S. Patent and Trademark Office at phone number **571-273-8300** on **July 24, 2006.**

Robert D Watson

Robert D. Watson

SD-7250.1

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APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY.DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/623,370	07/18/2003	1614	1158	SD-7250	4	38	4

CONFIRMATION NO. 3175

020567
SANDIA CORPORATION
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FILING RECEIPT

OC000000011077932

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Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections, facsimile number 703-746-9195. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

Applicant(s)

Mark D. Tucker, Albuquerque, NM;
Robert H. Comstock, Gardendale, AL;

Domestic Priority data as claimed by applicant

This application is a CIP of 10/251,569 09/20/2002
and claims benefit of 60/397,424 07/19/2002

Foreign Applications

If Required, Foreign Filing License Granted: 10/21/2003

Projected Publication Date: 01/29/2004

Non-Publication Request: No

Early Publication Request: No

Title

Decontamination formulation with sorbent additive

Copy sent to DOE 10/27/03

Mon, Jul 24, 2006 9:59 AM

Subject: <no subject>
Date: Monday, July 24, 2006 9:45 AM
From: Loukota, Mary <mloukot@sandia.gov>
To: "Watson, Robert D" <rdwatso@sandia.gov>

Application Number: 60/397,424 Customer Number: 20567
Filing or 371 (c) Date: 07-19-2002 Status: Provisional Application Expired
Application Type: Provisional Status Date: 09-01-2003
Examiner Name: - Location: http://www.uspto.gov/ebc/portal/info_location.htm <http://www.uspto.gov/ebc/portal/info_location.htm> http://www.uspto.gov/ebc/portal/info_location.htm <http://www.uspto.gov/ebc/portal/info_location.htm> FILE REPOSITORY (FRANCONIA)
Group Art Unit: - Location Date: 08-07-2002
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Attorney Docket Number: SD-7250 Earliest Publication Date: -
Class / Subclass: - Patent Number: -
First Named Inventor: Mark Tucker | Albuquerque, NM (US) Issue Date of Patent: -

Title of Invention: Powdered additive for DF-200

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SD-7250

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PROVISIONAL APPLICATION (35 U.S.C. § 1.111)

Assistant Commissioner for Patents
Box: Provisional Patent Application
Washington, DC 20231.

July 18, 2002

Sir:

In accordance with 35 U.S.C. 111(b), Applicants respectfully submit the enclosed invention description as a Provisional Patent Application: **Powdered Additive for DF-200**, by Mark D. Tucker, et al.

Respectfully Submitted,

Robert D. Watson

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CERTIFICATION UNDER 37 CFR 1.10

I hereby certify that this New Provisional Application Transmittal and the documents referred to as enclosed therein are being deposited with the U. S. Postal Service on the date indicated below, in an envelope as "Express Mail" with Mailing Label Number _____ addressed to: Assistant Commissioner for Patents, Box: Provisional Patent Application, Washington, DC 20231,.

July 19, 2002
Date

Viola Campos
Viola Campos

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

INVENTORS		
Given Name (first & middle)	*Surname or Family Name*	*Residence (City and State or Country)*
Mark D.	Tucker	Albuquerque, New Mexico, USA
Bob	Comstock	Gardendale, Alabama, USA
James W.	Morand	Scottsdale, Arizona, USA

TITLE OF THE INVENTION (280 characters max)

Powdered Additive for DF-200

CORRESPONDENCE ADDRESS

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PATENT & TRADEMARK OFFICE

020567

ENCLOSED APPLICATION PARTS (CHECK ALL THAT APPLY)

☒ Specification Number of Pages: 4

☒ Drawing(s) Number of Sheets: 0

METHOD OF PAYMENT OF FEES FOR THIS PROVISIONAL APPLICATION

☒ The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account No: 19-0131

Filing Fee Amount: $160

☒ This invention was made under Contract DE-AC04-94AL85000 with the United States Department of Energy

Respectfully submitted: Date July 18, 2002

Docket No: SD-7250

Signature: Robert D. Watson

Robert D. Watson, Reg. No. 45,604

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

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SF 1155-TD a (1-2002)

UCI-Patent Caution

Sandia National Laboratories

DISCLOSURE OF TECHNICAL ADVANCE

(Patent Office Use Only)

SD: 7250

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Assigned to:

B&R Code:

How to File a Technical Advance

- *Attach to this form a description of the technical advance, including what it does, how it works, and what makes it different from existing technology. Have at least one Originator, and one independent witness (non-Originator) sign and date each page added to this cover sheet.*
- *Attach copies of laboratory notebook pages, test data, photographs, and pertinent references (yours) and others). Color copies are preferred.*
- *This page must be signed by your organization's Authorized Derivative Classifier, a witness, and yourself.*
- *Send the Original and two copies to Patents, Org. 11500, MS 0161.*

Descriptive Title: Powdered Additive for DF-200

TA Preparer: Mark D. Tucker **Date:** 7/18/2002

TA Originators *(Those associated with the development of the technology being reported)*

Full Names *(add name of Company or University if not a Sandia Employee)*	SS No. (SNL only)	MS	Org.	Phone
Mark D. Tucker	322-58-8508	0734	6245	505-844-7264
Bob Comstock, Envirofoam Technologies, Inc.				256-319-0137
James W. Morand, Envirofoam Technologies, Inc.				256-319-0137

- Is this Sandia work? ☒ Yes ☐ No. If Yes, list source of TA Funding: Project: 37858 Task: 01
- Is the TA RELATED to an external collaboration? ☒ CRADA ☐ WFO ☐ NFE ☐ Informal ☐ None

If boxes checked, give: Name of Outside Partner Envirofoam ID number for agreement

- Is this work LDRD funded? ☐ Yes ☒ No

Project History:

1. Has the material in this TA been disclosed to non-Sandians? (journal, SAND report, etc.).....	☒ Yes	☐ No
2. Are you planning to disclose the material in this TA?.....	☒ Yes	☐ No
3. Is the invention in use for its intended application?.....	☐ Yes	☒ No
4. Have you offered to let non-Sandians use the invention?.....	☒ Yes	☐ No
5. Is the material in this TA recorded in a lab notebook or other permanent record?.....	☒ Yes	☐ No

Please provide details and DATES for any questions marked "Yes".

Question 1: Material has been disclosed to Envirofoam Technologies, Inc., a joint developer; Question 2: Material has been disclosed to Envirofoam Technologies, Inc. a joint developer; Question 4: Envirofoam Technologies, Inc.; Question 5: SNL notebook 082001MDT, Page 66 and Envirofoam Technologies, Inc. meeting notes

Classification: Title U Total Disclosure U Detailed Description of TA U

Authorized Derivative Classifier: Larry D Bustard Org.: 6245 Date: 7/18/2002

SIGNATURES TA Preparer: Mark Tucker Org.: 6245 Date: 7/18/2002

Witness (non-Originator): Larry D Bustard Org.: 6245 Date: 7/18/2002

(Printed Name) Larry D BUSTARD

UCI-Patent Caution

Description
Sandia National Laboratories has recently developed DF-200, an enhanced decontamination formulation for the neutralization of chemical and biological warfare agents and biological pathogens, which is described in Technical Advance SD-6989 (Tucker, MD, 2001, "DF-200 – An Enhanced Formulation for the Decontamination and Mitigation of CBW Agents and Biological Pathogens", Sandia National Laboratories, SD-6989/S-97,643). Two formulations associated with DF-200 are summarized below:

DF-200HF (Enhanced Formulation for High Foam Applications):

2.00% Variquat 80MC (cationic surfactant)
1.00% Adogen 477 (cationic hydrotrope)
0.40% 1-Dodecanol (fatty alcohol)
0.05-0.10% Jaguar 8000 (cationic polymer)
0.50% Di(propylene glycol) Methyl Ether (solvent)
2.00-8.00% Bicarbonate salt (buffer and peroxide activator)
1.00-4.00% Hydrogen Peroxide (oxidant)
1.00-4.00% Propylene Glycol Diacetate or Glycerol Diacetate (peroxide activator)
80.00-92.05% Water

Note: The formulation must be adjusted to a pH value between 9.6 and 9.85 and is effective for decontamination of all agents tested.

DF-200NF (Enhanced Formulation for No Foam Applications):

2.50% Benzalkonium Chloride
1.00-8.00% Propylene Glycol Diacetate or Glycerol Diacetate
1.00%-16.00% Hydrogen Peroxide
2.00%-8.00% Potassium Bicarbonate
65.50%-93.50% Water

Note: The formulation must be adjusted to a pH value between 9.6 and 9.85 and is effective for decontamination of all agents tested.

The term 'High Foam' refers to the ability of a formulation to form a highly stable and persistent foam whereas a 'No Foam' formulation does not include foaming constituents that may be used for specific applications such as for the kill of biological organisms, batch processing (such as in chemical agent demilitarization neutralization processes), or spray applications. DF-200 utilizes a water-soluble peroxide activator (propylene glycol diacetate or glycerol diacetate).

The primary purpose for the delivery of DF-200 as a foam is to enable it to adhere to vertical surfaces and the underside of horizontal surfaces for a sufficient period of time to allow neutralization reactions to occur with chemical agents and biological pathogens (the required contact time is anywhere from 2 minutes to 45 minutes depending on the agent to be neutralized).

This TA presents a convenient method to formulate DF-200 for practical use. It uses a highly sorbent material (sorbitol – a sugar alcohol) to 'dry out' the liquid peroxide activator (propylene glycol diacetate or glycerol diacetate). The activator becomes a free flowing powder which is more convenient to handle in the field. Sorbitol is chemically unreactive in DF-200. In addition, it does not destroy the foaming properties of DF-200. The two powders (urea hydrogen peroxide and the sorbitol/activator/polyethylene glycol blend) may be added to the liquid portion of DF-200 together and treated as if they were one powder (although they must be stored separately).

DF-200HF with Solid Additives (no additional water required)

DF-200HF Part A (Liquid Foam Component):
20.0 g Variquat 80MC
10.0 g Adogen 477
4.0 g 1-Dodecanol
8.0 g Diethylene Glycol Monobutyl Ether
5.0 g Isobutanol
50.0 g Potassium Bicarbonate
18.0 g Potassium Hydroxide (the pH of Part A should be approximately 10.4)
933.0 g Water

DF-200HF Part B (Solid Oxidant Component):
97.0 g Urea Hydrogen Peroxide

DF-200HF Part C (Liquid Peroxide Activator):
20.0 g Propylene Glycol Diacetate or Glycerol Diacetate
40.0 g Sorbitol (Sorbigem Fines)
20.0 g Polyethylene Glycol 8000 (Carbowax 8080)

Note: This formulation as described above will produce 1 liter of foam solution. The pH of the final formulation should be between 9.6 and 9.85. To prepare this formulation, use the following procedure: Mix Part B and Part C into Part A. After dissolution, use within 8 hours.

The performance of DF-200HF in the configuration shown above for neutralization of chemical agent simulants is given in Figure 1 below:

Simulant	% Decontaminated		
	1 Minute	15 Minutes	60 Minutes
Mustard (HD)	61	91	Not Detected
VX	28	92	>99

Figure 1: Reaction rates in kinetic testing for the DF-200HF.

Tests against the anthrax spore simulant (*Bacillus globigii* spores) demonstrated 99.9999% (7-log) kill after a 60 minute exposure to DF-200HF.

One method for mixing Part C is also presented. This method is described below:
1. Place the sorbitol powder in a mixing vessel.
2. While mixing, slowly add the liquid peroxide activator (propylene glycol diacetate or glycerol diacetate). Mix until a fine powder (no lumps) is achieved.
3. While continuing to mix, slowly add the polyethylene glycol 8000.
4. Let dry for approximately 24 hours. Re-mix to break up any lumps that have formed.

Project No. 37050
Book No. 082001 MPT TITLE DF-200 Packaging

From Page No.

Drying (solidifying) propylene glycol diacetate

use PVP (polyvinylpyrrolidone) as a binder - use PEG to increase tablet strength

Use this to bind organic solution

Vardyat
dodecanol
propylene glycol
propylene glycol diacetate
& adagen

66-1

20g pgd + 40g bicarb
+ 30g Dreary
+ 10g chp
+ 5g PEG — not free flowing

good powder - slightly sticky

To Page No

Witnessed & Understood by me, Date Invented by: M Date

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DE-200 Dried Activator

Book No. 2002MJ) 1

Page No.

-1-2 2 g pgda
0.25 g varisquat
10 g Sorbitol
3 g citric acid
nearly ffp

1-2-1 2 g pgda
0.25 varisquat
5 g Na citrate
.25 g 3 g Na Bisulfate (pH-)
3 g sorbitol
nearly ffp
good ffp after 2 days

test 21-3
20 g water
5.1 g 20-1-1
3.3 g 21-2-1
pH 9.8
B. layer forms

test 21-4
20 g water
5.1 g 20-1-1
20-3-2 (3.35)
pH 9.3
B. layer forms

1-5 20 g water + 5.1 g 20-1-1
bilayer forms

To Page No.

Witnessed & Understood by me, Date 5/23/02 Inventor By [signature] Date Recorded by